UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,730	02/23/2004	Mario I. Wolczko	SUN030248	9462

33438 7590 09/14/2006		EXAMINER
HAMILTON & TERRILE, LLP		JOHNSON, BRIAN P
P.O. BOX 203518		

ART UNIT	PAPER NUMBER
2183	

DATE MAILED: 09/14/2006

HAMILTON & TERRILE, LLP
P.O. BOX 203518
AUSTIN, TX 78720

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/784,730	WOLCZKO ET AL.
	Examiner	Art Unit	
	Brian P. Johnson	2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>11 July 2006</u>.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-18</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-18</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

1.   Claims 1-18 have been examined.

Acknowledgment of papers filed: amendments and remarks on 11 July 2006.

The papers filed have been placed on record.

Specification

2.   The title has been accepted. Objection is withdrawn.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Chrysos

(U.S. Patent No. 6,148,396).

5.   Regarding claims 1 and 6, Chrysos discloses a method of linking control transfer

information with sampling information (col 5 lines 40-42) for instructions executing in a

processor (col 2 line 17) comprising: storing information relating to execution events (col

1 lines 28-31) in a history queue (fig. 3); selecting an instruction for sampling (col 5 lines

39-42); storing information relating to the instruction for sampling (col 5 lines 44-48);

freezing the information relating to execution events in the history queue when the

information relating to the instruction for sampling is to be reported to provide frozen

execution event information (col 5 lines 45-58);

   Note that the "frozen" information is considered to be the profile information

saved into the registers.

   Reporting the information relating to the instruction for sampling; and, enabling

access to the frozen execution event information (col 6 lines 41-44) in the history queue

(fig. 3).

6.   Regarding claims 2 and 7, Chrysos discloses the method of claims 1 and 6

further comprising: freezing the execution event information provides information to

enable reconstructing an execution path of events adjoining the instruction (col 6 lines

42-45).

7.   Regarding claims 3 and 8, Chrysos discloses the method of claims 1 and 6

wherein: the storing information relating to execution events and the storing information

relating to the instruction occur within separate structures of a processor (col 5 lines 45-

48 and fig 3).

   Note that the citation discloses that the profile information is saved in a set of

internal profile registers.

8.   Regarding claims 4 and 9, Chrysos discloses the method of claims 1 and 6

wherein: the freezing the information relating to execution events disables storing of

additional information relating to execution events (col 5 lines 45-48).

Note that this claims appears to be referring to paragraph 28 of Applicant's

specification. Paragraph 28 states that profile information is not overwritte in certain

circumstances. Note that line 47 particularly states that the information is

"accumulated" rather than updated/removed.

9.   Regarding claims 5 and 10, Chrysos discloses the method of claims 1 and 6

further comprising: enabling storing information relating to execution events occurring

after execution of the instruction for sampling (col 9 lines 48-50 or col 5 lines 60-62).

Note that the retired information can be considered to be information relating to

execution events occuring after execution of the instruction (for sampling or otherwise).

10.   Regarding claim 11, Chrysos discloses a processor (col 2 line 17) comprising: an

instruction pipeline (col 2 lines 25-26); a sampling mechanism coupled to the instruction

pipeline (fig 3--in combination with additional processor circuitry), the sampling

mechanism selecting an instruction for sampling and storing information relating to the

instruction for sampling (col 5 lines 44-48); a history queue coupled to the pipeline, the

history queue (fig 3)

Note that, in view of paragraph [0007] of Applicant's specification, the "history

queue" appears to be a mechanism "which records most recent control transfers", which

happens to be the case with the mechanism shown in figure 3 of Chrysos.

Storing information relating to execution events (col 11 lines 30-32), the history

queue freezing the information relating to execution events when the information

relating to the instruction for sampling is to be reported to provide frozen execution

event information (col 5 lines 44-48) so as to enable linking control transfer information

with sampling information for instructions executing in the processor (col 5 lines 54-62).

11.   Regarding claim 12, Chrysos discloses the processor of claim 11 wherein: the

sampling mechanism reports the information relating to the instruction for sampling (col

5 lines 44-48).

Note that the "sampling mechanism" is considered to be the mechanism used to

complete the sampling functionality specified in the citation.

12.   Regarding claim 13, Chrysos discloses the processor of claim 11 wherein: the

history queue enables access to the frozen execution event information (col 6 lines 41-

44).

13.   Regarding claim 14, Chrysos discloses the processor of claim 11 wherein:

freezing the execution event information provides information to enable reconstructing

an execution path of events adjoining the instruction (col 5 lines 54-60).

14.   Regarding claim 15, Chrysos discloses the processor of claim 11 wherein:

freezing the information relating to execution events disables storing of additional

information relating to execution events (col 5 lines 45-48).

Note: see claim 4.

15.   Regarding claim 16, Chrysos discloses the processor of claim 11 wherein: the

history queue stores information relating to execution events occurring after execution

of the instruction for sampling (col 5 lines 60-62).

Note that information related to "whether the instruction was retired or abored" is

determined after execution.

16.   Regarding claim 17, Chrysos discloses a method of monitoring control transfer

information for instructions executing in a processor (col 5 lines 44-48) comprising:

storing information relating to execution events (col 5 lines 44-48) in a history queue

(fig. 3); freezing the information relating to execution events in this history queue when

the information relating to the instruction is to be reported to provide frozen execution

event information (col 5 lines 54-62); and, enabling access to the frozen execution event

information (col 6 lines 41-44) in the history queue (fig. 3).

17.   Regarding claim 18, Chrysos discloses the method of claim 17 wherein: the

freezing occurs based upon an instruction sample being reported (col 5 lines 44-46).

Response to Arguments

18.   Applicant's arguments filed 11 July 2006 have been fully considered but they are

not persuasive.

19.   Applicant state:

> "While Chrysos discloses an example of performance information branch or jump targets of the
> instruction, there is no disclosure in Chrysos of maintaining a history queue in which execution events are
> stored. The memory for storing profile information for each instruction being sampled of Chrysos ...
> merely stores information for the instruction being sampled, not for instruction events which would enable
> an instruction flow to be reconstructed as is possible by linking a history queue with a sampling
> mechanism in the present invention."

Examiner disagrees. Applicant appears to rely on the following claimed limitation

to imply the information stated above: "an apparatus for linking control transfer

information with sampling information for executing in a processor". There appears to

be no question that this limitation is met. The "branch/jump targets" (Chrysos, Col. 5,

lines 44-61) as cited and highlighted by Applicant clearly indicate "control transfer

information". The profile information of Chrysos satisfies the limitation of the "sampling

information" of Applicant's claimed invention.

Applicant appears to be arguing that these pieces of information are not linked.

Examiner disagrees. The American Heritage dictionary defines a link as "a connecting

element; a tie or bond". The control transfer information is portion of the sampling

information. They are linked for at least this reason.

Applicant also argues that the profile information is not stored in a history queue;

however, the original office action mailed on 19 April 2006 clearly indicated in the

rejection of claim 11 that a history queue was satisfied by the mechanism shown in fig.

3 of Chrysos. This analysis does not appear to be directly contested in Applicant's

response.

Conclusion

20.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Brian P. Johnson whose telephone number is (571) 272-

2678. The examiner can normally be reached on 8-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Eddie Chan can be reached on (571) 272-4162. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EDDIE CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100